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of interest, and is clearly written. The recent speculations upon the relation of angiosperms and gymnosperms; the connection between monocotyledons and dicotyledons, are given due attention. In the discussion of the question of the possible monocotyledonous affinities of Podophyllum, it may be said that the suggestion that the two apparent cotyledons are possibly one, *morphologically*, was *not* suggested by Holm. Much stress is laid upon the somewhat dubious "Pro-angiosperms" of the lower Cretaceous. These are supposed to have arisen from some eusporangiate filicineous stock and to have given rise, independently, to the monocotyledons and dicotyledons. If we are to assume that the angiosperms are monophyletic, it is considered that the monocotyledons are probably derivations of the dicotyledons. The recent mutation theory of De Vries is also given due attention.

Prof. Jeffrey's contribution of two final chapters on the vascular system has some value in itself, but comparatively little bearing upon the morphology of angiosperms. Of twenty pages, less than six deal with angiosperms, and of thirty-three figures only five represent this group. These chapters seem to us unnecessarily loaded with technical terms, and are by no means easy reading.

D. H. C.

**Notes.**—No. 25 of the new series of "Contributions from the Grey Herbarium of Harvard University," issued as No. 5 of the current volume of *Proceedings of the American Academy of Arts and Sciences*, on Sept. 25, is an important paper by Greenman on Mexican and Central American Angiosperms, mostly of recent collection.

An account of an ecological study of Big Spring Prairie, Wyandot County, Ohio, by Bonser, is published as no. 7 of the *Special Papers* of the Ohio State Academy of Science.

Vol. 3, fascicle 1, of Urban's *Symbolæ Antillane*, dated September 16, contains the first part of a "Flora Portoricensis," by Urban.

Fascicle 126 of the *Flora Brasiliensis*, issued in December, 1902, concludes Vol. 3, part 5, of the work, dealing with orchids.

The long-delayed number needed to complete the 1901 volume of the *Bulletin de la Société Botanique de France*, dealing with the 1901 session in Corsica, contains important data on the flora of that island, including an especially full account of the fungi.

An account of the vegetation of Corsica, with photograms, by Rikli, is published in the *Viertel-Jahrsschrift der Naturforschenden Gesellschaft in Zürich*, of Apr. 11, 1903.

Vol. 2, fascicle 5, of Coste's *Flore descriptive et illustrée de la France, de la Corse et des Contrées limitrophes*, carries the work into Solanaceæ.

With volume 8, issued in April, 1903, the Rouy, Foucaud and Camus *Flore de France* is brought to a conclusion, and correction sheets for the earlier parts are added to this volume.

An account of the flora of the Sundribuns, by Crain, is published as Vol. 2, no. 4, of the *Records of the Botanical Survey of India*; and from the Government Printing Office at Calcutta is being issued a Flora of the Upper Gangetic Plain, and of the adjacent Siwalik and Sub-Himalayan Tracts, by Duthie, — the first part covering Ranunculaceæ to Cornaceæ.

The first fascicle of an illustrated quarto treatise on the botany of the middle and lower Congo, by de Wildeman, has been issued as a part of the *Annales du Musée du Congo*, of Brussels.

Volume 35 of the *Transactions and Proceedings of the New Zealand Institute*, as is usual with that publication, contains a number of important botanical articles.

Recently issued parts of Engler's *Das Pflanzenreich* are the following: — 12, Pfitzer, Orchidaceæ-Pleonandræ; 13, Ruhland, Eriocaulaceæ; 14, Grosser, Cistaceæ; 15, Mez, Theophrastaceæ.

A paper on root, stem and leaf structure of *Eschscholtzia californica*, by Denniston and Werner, is contained in Vol. 6, no. 8, of *Pharmaceutical archives*.

Under the name *Wittia Amazonica*, Schumann describes and figures in the *Monatsschrift für Kakteenkunde*, of August, a new generic type of cactus from Peru, of the aspect of *Phyllocactus* but with small red flowers.

The *Revista do Centro de Sciencias, Letras e Artes de Campinas*, of July 31, contains a description and figure of *Rhipsalis pilocarpa*, by Löfgren, and diagnoses and illustrations of a number of other new Brazilian plants by Edwall.

The *Monatsschrift für Kakteenkunde*, of September 15, contains descriptions of several new cacti.

*Cereus gummosus*, as it grows in Lower California, is figured by Schumann in the *Monatsschrift für Kakteenkunde*, for July 15.

The *Gardeners' Chronicle* of August 8 may be called an *Opuntia* number, with numerous illustrations of this genus as cultivated at La Mortola.

A cristate tree of *Cereus giganteus*, in situ, is figured by Mrs. Drennan, in *Floral Life* for September.

A good figure of *Yucca glauca*, as it grows in Colorado, is printed in *Floral Life* for August.

Excellent practical instructions for the collection of herbarium material of palms are given by Dammer in the *Notizblatt des K. botanischen Gartens und Museums* of Berlin, of July 10.

A paper on the phylogeny of Angiosperms, resuming publications in the *Botanical Gazette*, is reprinted by Coulter from Vol. 10 of the *Decennial Publications* of the University of Chicago, under date of April 1.

The endogenous adventive buds of several genera of phanerogams are considered by De Candolle in a separate from the *Archives des Sciences Physiques et Naturelles* of Geneva, for July.

The structure of a number of the woods of Borneo is described by Bargagli-Petrucci, and illustrated with photograms, in fascicle 6-8 of *Malpighia* for 1903.

The first part of a study of the comparative anatomy of the barks of the Salicaceæ, by Perrédès, is published as No. 39 of the papers from the Wellcome Chemical Research Laboratories, of London.

The root anatomy of Angiosperms is the subject of a paper by Kroemer, forming Heft 59 of *Bibliotheca Botanica*.

Variation in the androecium of *Stellaria media* is discussed, with curves, by Reinöhl, in the *Botanische Zeitung*, I Abteilung, of September 16.

A paper on the development of the fruits in heterocarpic Composites is published by Patané in *Malpighia*, Vol. 17, fascicle 9.

Dr. Chamberlain's paper on Mitosis in Pelliæ, contained in the *Botanical Gazette* of July, is concurrently issued from Vol. 10 of the *Decennial Publications* of the University of Chicago.

The application of the kinematograph to the class presentation of plant movements is continued by Miss Scott in a paper on the movements of the flowers of *Sparmannia africana* in the *Annals of Botany* of September.

The spurting of water from the leaf-tips of *Colocasia nymphæfolia* is considered by Molisch in the *Berichte der deutschen Botanischen Gesellschaft* of September 21.

The phenological relations of sun-spots form the subject of a short note, with curves, by MacDowall, in *Nature* of August 27.

An illustrated account of the lumber industry of the Northwest coast, by Lamb, is contained in *Out West* for October.

A nicely illustrated popular article on Elm and Tulip trees, by McFarland, is contained in *The Outlook* of October 3.

An economic account of *Zizania*, by Brown and Scofield, is published as *Bulletin No. 50* of the Bureau of Plant Industry of the United States Department of Agriculture.

The differentials of varieties of *Avena*, and those of *Triticum*, are respectively discussed by Dufour and Dassonville in the *Revue générale de Botanique* of July 12, and Scofield in *Bulletin No. 47* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

An account of rattans and the rattan industry is contained in the *Agricultural Bulletin of the Straits and Federated Malay States*, for April and May last.

An illustrated paper on origin and distribution of camphor in the camphor tree, by Homi Shirasawa, is published in Vol. 5, no. 3, of the *Bulletin of the College of Agriculture* of the Tōkyō Imperial University.

In the *Pharmaceutical Review*, of September, True shows that under the name of Pink-root *Ruellia ciliosa* occurs in the trade, as well as *Spigelia marilandica*.

A well illustrated account of *Castilla elastica* and the Central American production of rubber from it, by Cook, forms *Bulletin no. 49* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

The first of a series of notes on latex-yielding Apocynaceæ of the Congo, by De Wildeman, has been issued at Brussels as a publication of the Independent State of the Congo.

An account of the root-parasitism of the sandal tree, by Rama Rao, is contained in *The Indian Forester* of September.

An account of the Isoetes of southern California is compiled for the *West American Scientist* of September.

Helpful notes on the collection and cultivation of cryptogams for use in the biological laboratory are contained in current numbers of the *Journal of Applied Microscopy and Laboratory Methods*.

An annotated edition of the Codex of Clusius, the original of which appeared three centuries ago, has recently been issued by Istvánffi, of Budapest, and is illustrated by colored reproductions of the original water color sketches of fungi, by Clusius.

A key to the species of *Rhizopus*, with description of a new parhogenic species, *R. equinus*, is published by Costantin and Lucet in the July number of the *Bulletin trimestriel de la Société mycologique de France*.

A note on Costa Rican edible fungi is contained in No. 24 of the *Boletín el Instituto Físico geográfico de Costa Rica*.

Several edible fungi are illustrated in the *Gardener's Chronicle* of September 19.

Inoculation experiments with graminicolous species of *Claviceps* are described by Stäger in the *Botanische Zeitung*, Abteilung 1, of July 30.

Some decay of stored apples is shown by Eustace, in *Bulletin No. 235*, and the popular edition of the same, of the New York Agricultural Experimental Station, to be caused in part by a species of *Hypochnus* following *Fusicladium*, and in part to be of an obscure origin, without any parasitic cause so far as determined.

Oudemans and Koning have distributed two recent papers on a new *Sclerotinia* of tobacco, from the Amsterdam Academy.

An economic account of the wilt disease of tobacco, caused by a species of *Fusarium*, forms the subject of part 1 of *Bulletin No. 51*, of the Bureau of Plant Industry of the United States Department of Agriculture, by McKenney.

An important paper on the bacteria of tilled soil, by Hiltner and Störmer, forms Vol. 3, Heft. 5, of *Arbeiten aus der Biologischen Abtheilung für Land und Forstwirthschaft am K. Gesundheitsamte*, of Berlin.

Bacteria and the Nitrogen Problem is the title of an article by Moore, separately printed from the 1902 *Yearbook* of the Department of Agriculture.

An extended consideration of the significance of bacteriological methods in sanitary water analysis, by Winslow and Nibecker, is contained in the *Technological Quarterly* for September.

An account of the lichens of the northern boundary of Minnesota, by Fink, is separately printed from *Minnesota Botanical Studies*, under date of July 3.

Vol. 4 of De Toni's *Sylloge Fungorum*, recently issued, continues the Florideæ.

An account of the algæ which contaminate public water supplies, by Moore, is separately printed from the *Yearbook* of the Department of Agriculture, for 1902.

A most interesting portrait gallery of distinguished botanists is contained in Professor Wittrock's "Catalogus Illustratus Iconothecæ Botaniciæ Horti Bergiani Stockholmiensis," issued as Vol. 3, No. 2, of the *Acta Horti Bergiani*.

A portrait of Celakovsky forms the frontispiece to the *Sitzungsberichte der k. böhm. Gesellschaft der Wissenschaften — Mathematisch-naturwissenschaftliche Classe*, for 1902.

A short account of the San Salvador botanical garden is contained in the *Anales del Museo Nacional* of that Republic, of August 1.

A sketch of the botanical gardens at Frankfurt am Main, by Möbius, is separately printed from the 1903 *Bericht der senckenbergischen naturforschenden Gesellschaft*.

**The Journals.**—*The American Botanist*, for July, contains the following popular articles:—Bradshaw, "The Castor-oil Plant"; Hæselbarth, "The Walking Fern"; and Clute, "Pollination of the Sunflower."

*The Botanical Gazette*, for August, contains the following:—Lawson, "Studies in Spindle Formation"; Frye, "The Embryo-sac of *Casuarina stricta*"; Coker, "The Gametophyte and Embryo of *Taxodium*—concluded"; Bliss, "The Occurrence of two Venters in the Archegonium of *Polytrichum juniperinum*"; and Cook, "Polyembryony in Ginkgo."

*The Botanical Gazette*, of September, contains the following articles:—Ganong, "The Vegetation of the Bay of Fundy salt and diked Marshes"; Shull, "Geographic Distribution of *Isoetes saccharata*"; Parish, "A Sketch of the Flora of Southern California"; Thom, "A Gall upon a Mushroom"; and Coker, "Selected Notes, II.—Liverworts."

*The Bryologist*, for September, contains the following articles:—Gozzaldi, "Thomas Potts James," with portrait; Holzinger, "*Fabroleskea austini* in Europe"; Chamberlain, "Mounting Moss Specimens," and "*Buxbaumia aphylla*"; Harris, "Lichens — *Nephroma Solorina*"; Hill, "Branched Paraphyses of *Bryum roseum*"; and Lindberg, "*Stereodon plicatulus*."

The *Bulletin of the Torrey Botanical Club*, for August, contains the following:—Murrill, "The Polyporaceæ of North America — V, The Genera *Cyrtoporus*, *Piptoporus*, *Sentiger* and *Porodiscus*"; "Mez, Bromeliaceæ Nicaraguenses Novæ"; Berry, "The American Species referred to *Thinnfeldia*"; Wiegand, "Some Notes on *Juncus*"; and Nash, "Revision of the Family Fouquieriaceæ."

The *Bulletin of the Torrey Botanical Club*, for September, contains the following:—Best, "Revision of the North American Species of *Leskea*"; Eastwood, "New Species of Western Plants"; MacDougal, "Some Correlations of Leaves"; and Cushman, "Desmids from Bronx Park, New York."

*The Fern Bulletin*, for July, contains the following articles:—Fitzpatrick, "The Fern Flora of Iowa"; Clute, "Fernwort Notes, III"; Eaton, "The genus *Equisetum* in North America, XIV, *E. hiemale*"; Gilbert, "Campbell Easter Waters" (with portrait); Gilbert, "*Asplenium muticum*"; Flett, "The Fern Flora of Washington"; Christ, "Can *Scolopendrium lindenii*, Hook. be separated from *S. vulgare* Sm.?" and Gilbert, "Two New Varieties of the ternate *Botrychium*."

*The Plant World*, for August, contains the following articles:—Safford, "Extracts from the Note-book of a Naturalist on the Island of Guam, IX"; Straw, "Ferns of Smugglers' and Nebraska Notches"; Spaulding, "The Relations of Insects to Fungi"; Barrett, "The Birthplace of Agriculture"; Lindahl, "A fasciated Tulip"; and Waters, "Some Summer Observations."

*The Plant World*, of September, contains the following articles:—Baum, "The Breadfruit"; Bailey, "Lianes"; Safford, "Extracts from the Note-book of a Naturalist in Guam, X"; Goetting, "The *Leucocrinum*"; and Barrett, "Three Ecological Problems."

*Rhodora*, for August, contains the following articles:—Fernald, "American Representatives of *Luzula vernalis*"; Phelps, "An Hour in a Connecticut Swamp"; Webster, "A Beautiful *Pluteolus*";



Collins, "Some Notes on Mosses"; Eames, "The Dwarf Mistletoe in Ct."; and Collins, "Notes on Algæ, V."

*Rhodora*, for September, contains the following articles:—Eames, "The Dentarias of Connecticut"; Collins, "Isaac Holden"; Cushman, "Notes on New England Desmids, I"; Fernald, "*Arabis drummondii* and its relatives"; Collins, "Notes on Algæ, VI"; Robinson, "On the Twelfth List of New England Plants"; and a short notice of the late Charles James Sprague.

*Torrey*, for September, contains the following articles:—Berry, "Liriodendron Notes"; Robinson, "The Distribution of *Fucus serratus* in America"; Earle, "Key to the North American Species of *Galera*"; Richards, "An improvised horizontal Microscope"; Griggs, "A remarkable *Physalis*"; Cockerell, "Two Orchids from New Mexico"; Small, "The Habitats of *Polypodium polypodioides*"; and Barnhart, "Duplicate Binomials."